CLAIMS

What is claimed is:

1. A method for converting oxygenates to olefins comprising contacting said oxygenates and an aromatics co-feed with a framework gallium-containing molecular sieve catalyst comprising pores having a size ranging from about 5.0 Angstroms to 7.0 Angstroms, under conversion conditions effective to produce olefins.

2. The method of claim 1 wherein said molecular sieve catalyst is selected from the group consisting of ZSM-5, ZSM-11, ZSM-12, ZSM-23, ZSM-35, ZSM-48, and MCM-22.

3. The method of claim 1 wherein said molecular sieve catalyst is selected from the group consisting of ZSM-5 and ZSM-11.

4. The method of claim 1 wherein said molecular sieve catalyst comprises ZSM-5.

5. The method of claim 1 wherein said oxygenates are selected from the group consisting of methanol, ethanol, n-propanol, isopropanol, C_4-C_{20} alcohols, methyl ethyl ether, di-methyl ether, di-ethyl ether, di-isopropyl ether, methyl isopropyl ether, ethyl isopropyl ether, di-methyl carbonate, carbonyl compounds, and mixtures thereof, and said aromatics co-feed comprises aromatic compound which can diffuse into channels or cages of said catalyst together with oxygenate and are selected from the group consisting of benzene, toluene, xylenes, light reformates, full-range reformates or any distilled fraction thereof, coker naphtha or any distilled fraction thereof, FCC naphtha or any distilled fraction thereof, steam crack naphtha or any distilled fraction thereof and coal derived aromatics.

6. The method of claim 1 wherein said oxygenates are selected from the group consisting of methanol and dimethyl ether and said aromatics co-feed is selected from the group of aromatic compounds consisting of toluene and xylenes.

7. The method of claim 2 wherein said oxygenates comprise methanol and said aromatics co-feed comprises xylenes.

8. The method of claim 5 wherein the molar ratio of oxygenate to aromatic compound is greater than 0.1:1 and less than 300:1.

9. The method of claim 1 wherein said conversion conditions comprise a temperature of from about 100°C to about 600°C, a pressure of from 1 psia to 200 psia (6.9 to 1380 kPa), and a weight hourly space velocity in the range of from about 0.01 to about 500 hr^{-1}.

10. The method of claim 2 wherein said conversion conditions include a temperature of 350°C to 480°C, a pressure of from about 5 psia to 100 psia (34 kPa to 680 kPa), and a weight hourly space velocity in the range of from about 2 to about 100 hr^{-1}.

11. The method of claim 1 wherein said conversion conditions are effective to provide an ethylene/propylene molar product ratio ranging from 0.1 to 7.

12. The method of claim 2 wherein said conversion conditions are effective to provide an ethylene/propylene product ratio of at least 1.

13. The method of claim 1 wherein said catalyst is a zeolite bound zeolite.

14. The method of claim 1 wherein said catalyst is a zeolite bound zeolite having a bound framework Ga-containing zeolite having a Si/Ga molar ratio

ranging from 5 to 500 and a binder of framework Ga-containing zeolite having a Si/Ga molar ratio ranging from 5 to ∞.

15. The method of claim 1 wherein said catalyst is a zeolite bound zeolite having a bound Ga-modified zeolite having a Si/Ga molar ratio ranging from 5 to 500 and a binder of Ga-modified zeolite having a Si/Ga molar ratio ranging from 5 to ∞.

16. The method of claim 1 wherein said catalyst comprises silicoaluminophosphate.

17. A method for converting methanol and/or dimethyl ether to a product containing C_2 and C_3 olefins which comprises the step of contacting a feed which contains methanol and/or dimethyl ether with a catalyst comprising a gallium-modified ZSM-5 porous crystalline material, said contacting step being conducted in the presence of an aromatic compound under conversion conditions including a temperature of 350°C to 480°C and a methanol and/or dimethyl ether partial pressure in excess of 6.9 kPa, and the aromatic compound being capable of alkylation by the methanol and/or dimethyl ether under said conversion conditions.

18. The method of claim 17 wherein said catalyst comprises zeolite-bound zeolite having a bound framework Ga-containing zeolite having a Si/Ga molar ratio ranging from 5 to 500 and a binder of framework Ga-containing zeolite having a Si/Ga molar ratio ranging from 5 to ∞.

19. The method of claim 18 wherein said catalyst comprises zeolite-bound zeolite having at least one component selected from the group consisting of bound Ga-modified zeolite having a Si/Ga molar ratio ranging from 5 to 500 and a binder of Ga-modified zeolite having a Si/Ga molar ratio ranging from 5 to ∞.

20. A catalyst composition comprising a ZSM-5 zeolite-bound ZSM-5 zeolite having a bound framework Ga-containing zeolite having a Si/Ga molar ratio ranging from 5 to 500 and a binder of framework Ga-containing zeolite having a Si/Ga molar ratio ranging from 5 to ∞.

21. The catalyst composition of claim 20 wherein said catalyst comprises at least one component selected from the group consisting of bound Ga-modified ZSM-5 zeolite having a Si/Ga molar ratio ranging from 5 to 500 and a binder of Ga-modified ZSM-5 zeolite having a Si/Ga molar ratio ranging from 5 to ∞.